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Actions for safety in the prescription, use and administration of medications in emergency care units

Ações para segurança na prescrição, uso e administração de medicamentos em unidades de pronto atendimento

Acciones para la seguridad en la prescripción, consumo y administración de medicamentos en una unidad de pronta atención.

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ABSTRACT

Objective: To identify what risks and incidents related to the drug therapy process are presented in an Emergency Care Unit (UPA) and to present proposals for management actions and safe practices, in the perception of the nursing team.

Method: Qualitative research, in the research-action modality, developed in the scenario of UPA, located in the interior of São Paulo. Data collection was done through interviews and focus groups with 33 professionals, between June 2015 and April 2016. For the data treatment, the Content Analysis Technique was used.

Results and discussion: From the participants' reports, thematic categories were organized, with the risks and incidents related to the drug therapy process being one of the listed categories, as well as proposals for actions.

Conclusion: The study allowed the implementation of patient safety actions related to the administration of drugs in a PAU, offering a higher quality of care.

Keywords: Patient safety. Emergency hospital service. Medication errors.

RESUMO

Objetivo: Identificar os riscos e incidentes relacionados ao processo de terapia medicamentosa no cenário de uma Unidade de Pronto Atendimento (UPA) e propor ações de gerenciamento e práticas seguras na percepção da equipe de enfermagem.

Método: Pesquisa qualitativa, na modalidade pesquisa-ação, desenvolvida no cenário de uma UPA, localizada no interior de São Paulo. A coleta dos dados foi realizada por meio de entrevistas e grupos focais com 33 profissionais, entre junho de 2015 e abril de 2016. Para o tratamento dos dados, utilizou-se a Técnica de Análise de Conteúdo.

Resultados e discussão: A partir dos relatos dos participantes foram organizadas categorias temáticas, sendo os riscos e incidentes relacionados ao processo de terapia medicamentosa uma das categorias elencadas, assim como propostas de ações.

Conclusão: O estudo possibilitou a implementação de ações de segurança ao paciente, relacionadas à administração de medicamentos em uma UPA, oferecendo maior qualidade do cuidado.

Palavras-chave: Segurança do paciente. Serviço hospitalar de emergência. Erros de medicação.

RESUMEN

Objetivo: Identificar cuáles son los riesgos e incidentes relacionados con el proceso de terapia medicamentosa en una Unidad de Pronta Atención (UPA) y presentar propuestas de acciones de gestión y prácticas seguras en la percepción del equipo de enfermería.

Método: Investigación cualitativa, en la modalidad investigación-acción, desarrollada en el escenario de una UPA, ubicada en el interior de San Pablo. Se recolectaron los datos a través de entrevistas y grupos focales con 33 profesionales, entre junio de 2015 y abril de 2016. Para procesar los datos, se utilizó la Técnica de Análisis de Contenido.

Resultados y discusión: A partir de los relatos de los participantes, se organizaron categorías temáticas, siendo los riesgos e incidentes relacionados al proceso de terapia medicamentosa una de las categorías enumeradas, así como las propuestas de acciones.

Conclusión: El estudio permitió implementar acciones de seguridad del paciente relacionadas con la administración de medicamentos en una UPA, ofreciendo mayor calidad del cuidado.

Palabras clave: Seguridad del paciente. Servicio hospitalario de emergencia. Errores de medicación.

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INTRODUCTION

The assistance provided in the non-hospital emergency services in the Unified Health System (SUS), better known as Emergency Care Units (UPA), has as main objective to restore the vital parameters of individuals who need rapid care, as there may be a risk imminent death. These units are points of attention of the Emergency Network, of intermediate complexity between the Units of Primary Health Care and the Hospital Network, and they operate 24 hours a day every day of the week[1].

In the last decades, there has been an increase in the demand for these services, attributed both to the changes in the epidemiological profile and the impact caused by the morbidity and mortality of chronic noncommunicable diseases and the increase in urban violence. These situations, together with the aspects related to the structuring of these services[2], has compromised the quality of care provided by transforming emergency services into one of the main problems of SUS[1].

Discussions related to risks and incidents arising from health care express a worldwide concern[3], and in Brazil it is possible to observe a movement in favor of patient quality and safety in health services[4-5].

In 2013, the Ministry of Health (MS) established the National Patient Safety Program (PNSP)[4], representing a step forward as public policy, insofar as it recognizes the magnitude of adverse events in the country and fosters the expansion of knowledge on the subject. One of the goals established by the PNSP focuses on the occurrence of events in the drug therapy process, and the **"Safety Protocol on Prescription, Use and Administration of Medicines"**[5], a guiding document for the promotion of safe practices in the use of medicines in health facilities in the country.

Errors resulting from drug therapy represent one of the most common types of incidents in health facilities and are largely caused by failures in procedures and procedures during care. They can occur at all stages of the drug therapy: prescription, dispensing, preparation, administration and monitoring, and can result in serious damage and even death of the patient[6-7].

It is estimated that in the United States, medication errors cause damage to approximately 1.3 million people annually, costing almost 1% of the total health expenditure in the world[6]. However, in Brazil, the magnitude of these events and what are the direct and indirect costs of events associated with medication errors are still uncertain[5].

Against this background, in 2017, the World Health Organization (WHO) launched the third "Global Patient Safety Challenge", titled **"No-Damage Medication"**[6], which goal was to reduce severe drug-related harm by 50% over the next five years.

Although research and actions in favor of patient safety have advanced on a global scale, there are still gaps when it comes to non-hospital and emergency services, a reality not only Brazilian, but also present in the international scenario, justifying studies with focus in this context[5-9]. Thus, the present study had as guiding questions: What risks and incidents related to the drug therapy process are present in a PAU, what management actions and safe practices can be implemented in order to minimize these occurrences.

It is believed that knowing the risks capable of raising the potential for errors is an essential element in the management and implementation of patient safety actions[7]. In this perspective, the objectives of this study were to identify the risks and incidents related to the drug therapy process, in the scenario of a UPA, and to propose management actions and safe practices, in the perception of the nursing team.

METHODS

This is a qualitative research in the research-action modality, coming from dissertation[10] developed in the setting of a UPA located in the interior of the State of São Paulo. In this unit, approximately 1,000 patients are treated daily, SUS users, over 12 years old, coming from spontaneous demand or referred by Pre-Hospital Mobile Service and Basic Health Units.

This design was adopted because it believes that, for the execution of actions in risk management and patient safety, it is necessary to have commitment and involvement of professionals, as well as managers of health institutions. Thus, the method based on collective construction to transform a reality was configured as a facilitator in the process.

As a methodological reference, a cycle of continuous and interrelated phases (exploratory phase, phase of deepening of the thematic, phase of action and evaluation, and dissemination of results) was followed, which must walk the path between research and action in a flexible and simultaneous manner[11].

Thirty-three nursing workers of both genders participated in this study. It was decided to include workers from different categories (nursing auxiliaries and technicians as well as nurses) because they constitute the largest contingent of the workforce in health institutions, characteristics also present in the referred service in which nursing represents 51% of the total multiprofessional health team, as well as for its vital role in preventing errors during the drug therapy process.

The nursing workers invited to participate in the study received guidance on the objectives and procedures to be performed. Those who accepted signed the Free and Informed Consent Form (ICF) and were guaranteed anonymity and the right to withdraw at any time of the study, without prejudice of any kind.

Data collection was carried out from June 2015 to April 2016, with semi-structured interview techniques and the Focus Group (GF). Data were collected at the health facility in a reserved room and closed when the statements and discussions indicated saturation of data[12] with the objectives proposed for the study.

Participants for the interviews were selected for convenience, contemplating nursing workers in the different categories, who were on duty on different days and shifts, and who agreed to participate in the study. After the interview stage, two moments of collective discussion, previously disclosed, were made available through posters posted in an easy-to-view location in the unit, and the participation of the workers in the GF was selfless.

For the semi-structured interviews, a guiding roadmap was constructed, built by the researcher, based on questions that sought to explore situations experienced by the worker involving risks and incidents as a result of the care of the patient in the context of urgent care, in affirmative responses, he considered it determinant for the occurrence; what measures have been taken by him, the health team and the managers against this occurrence, as well as what measures can be implemented to prevent the risks and incidents experienced in his workplace.

To conduct the GF, a public domain video was used as the trigger element (available at: https://www.youtube.com/watch?v=1DRGqrsD0rE), which addresses real situations of adverse events. Thus, it was possible to problematize and contextualize these experiences, and to correlate them to the occurrences evidenced by the workers in their place of work.

The data analysis was performed using the Content Analysis technique, in thematic modality[12], emerging the nuclei of meaning of speech and the meaning of the messages expressed by both verbal and non-verbal communication. The nuclei were later listed in thematic axes and categories, the categories inherent to **"Risks and incidents related to drugs"** and **"Actions to implement safe practices"**, focus of this article.

Excerpts from the speeches of the participants were used to exemplify the construction carried out along this action research. As a way of ensuring anonymity, we chose to use the letters "E" to identify interview participants and "GF" for the focus groups, followed by numbers referring to the order of participation of the workers.

This investigation began after the approval of the Research Ethics Committee of the Ribeirão Preto College of Nursing (CAAE 39982414.1.0000.5393) and followed all ethical precepts recommended by Resolution 466/2012 of the National Health Council.

RESULTS AND DISCUSSIONS

Among the participants (33 nursing workers), six (18.2%) were nurses, 22 (66.7%) nursing technicians and five (15.1%) nursing assistants. As to age and sex, 24 (72.7%) had between 26 and 45 years, 26 (78.8%) women, which denotes a predominantly young and female team. Regarding professional training, the majority (63.7%) had more than 11 years of training, and it is possible to infer that it is a team with experiences and skills to perform in nursing.

From the reports of the participants emerged risks and incidents involving health care and drug therapy, which were categorized and are presented below.

Drug-related risks and incidents

Regarding drug therapy, participants mentioned risks and incidents that occurred in the unit during the whole process, from medication prescription to post-administration patient monitoring. The reports were correlated to the verification items for safe practices in the drug therapy process, as recommended by the **"Safety protocol on the prescription, use and administration of drugs"**[7] presented in Chart 1.

From the testimonies it was possible to observe the risks and incidents involving drug therapy that occur in the daily work of the unit, attributed not only to individual failures, but also situations that involved organizational processes and were related to the high number of visits and procedures performed , translated into work overload that exposes the team to the limit.

The situations presented portray a reality not restricted to this service. A study carried out in an emergency sector showed that the most frequent risks were: illegible prescriptions, absence of relevant data, polypharmacy and drug interactions, corroborating with the present study[13].

Occurrences involving failures in patient identification at the time of drug administration were also highlighted. Patient identification has been one of the most discussed issues when it comes to safety. This measure should be understood as something that ensures that the care provided is directed to the person to whom it is intended, that is, prescribed and performed to the correct patient. Represents the first international goal proposed by WHO[3].

Check Items in Non-Compliance	Nursing team reports
Patient identification	*Changing medication, a relatively commonplace thing; The exchange of medication is, in fact, neither was the exchange of medication, medication in the wrong patient, the medication was right, but the patient was wrong (E24).*
Identification of allergies	*Yes, I already witnessed, the clerk put the form on the counter, then another clerk came in a hurry, took the plug, prepared the medication and called another patient, the employee went and did and the patient was allergic to the prescription of the other patient (E5).*
Manual prescription	*The risk for patients is also the letters of the doctors, how often the doctor writes badly and we find it hard to understand, we often must go there and ask him, so he is at risk of making the wrong medication (E15).*
Verbal prescription	*I have already lived risks, I have already experienced risks for the doctor asking for medication by speech, only talking, the medication being done twice, a doctor not prescribing, just talking and the medication being made in the wrong way of administration (E17).*
Route of administration	*I have already experienced that a doctor does not prescribe and only talk, and the medication is made in the wrong route of administration already had risk, had an incident (E17).*
Dosage calculation	*Already, I think with more risk than with incident, wrong medication, the doctor prescribed medication and sometimes the dose was unnecessary, greater than can be prescribed (E23)."*
Infusion time	*I think it is inappropriate to take the medication because sometimes we must do it in a very fast time, because there is always another time that needs to be filled (E7).*
Dilution	*The prescription is for you to make two applications. Only you have medication that you can inhale and can associate, and you have no medication. It just does not have something showing you that you can do it or not [...] certain medications lose the biochemical effect, right?*
Selection and distribution of medicines	*Drug therapy has several examples of risks, since I took the medication mixed in the box, in the box (form of storage of medicines in the service), has happened to take dipyrone instead of ranitidine (GF2-P2).* *When I worked at another institution, I went to the pharmacy to get the medicine, only the medication I was going to administer, it was not all exposed as it is here, there was one person doing it, and she was distributing the medicines per patient (GF2-P3).*
Post administration monitoring	*[...] Are you okay? Oh, I'm not feeling well, the patient replied. Did you take any injections in your vein? Yes, but I'm not feeling good (GF2-P1).*
Potentially dangerous drugs	*He is a patient with hyperglycemia, the patient stayed three hours without checking the glycemia. The amount of insulin can interfere, so the patient then has hypoglycemia, as some have already, and then they must make glucose (E18).* *I have lived the risk of the patient being unaccompanied and taking some psychotropic medication, in these cases he does not have conditions for example, going to the bathroom, getting up alone may have a fall (E5).*

Chart 1- Risks and incidents related to the drug therapy process, according to verification items for safe prescription
Source:[10].

Regarding the procedures recommended in the process of identifying patients in health institutions, the patient's identity must be confirmed prior to the care given, especially if it involves administering drugs, blood and blood products, collecting material for examinations and performing invasive procedures. Although there is consensus on the benefits of this measure to reduce errors, patient identification has not yet been recognized and incorporated into practice as an essential element of safe care[14].

Regarding the failures in the prescription stage, the participants identified as barriers to safety in drug preparation and administration the fact that medical prescription in

said service be performed manually, contributing to medication errors related to the difficulty of understanding the prescribed medication, because of illegibility or absence of necessary items.

When the prescription contains potentially dangerous medications/high vigilance, errors due to illegibility can be severe, even fatal[5,15] .

The illegibility and lack of data in the prescription can make unfeasible conferencing during dispensation and administration by the team[13], as well as may generate additional expenses for the institution because they require professional time, which causes delays in care and compromises the quality of care.

The reality is present in other institutions, a study on legibility and necessary items in the prescription stage found 51% of prescriptions considered illegible and 71.6% of them were missing data, a result of a similar study found that 91.3% of prescriptions contained acronyms and / or abbreviations making it difficult to understand the prescription[13-16].

As well as the manual prescriptions, verbal prescriptions of doctors for administration of medicines were also cause for concern by some participants. From the workers' perspective, this practice has contributed to the occurrence of errors. Although verbal prescriptions are likely to occur in these services, as mentioned above, recommendations for safe practices recommend that they be adopted only in emergencies[5].

As important as the prescription step, it is the selection and dispensation of the medication to be administered, concerns expressed by professionals, since, at the place of study, drugs are not dispensed by the institution's Pharmacy by prescription and in unit doses per patient, as recommended by the PNSP[5], on the contrary, there is a stock of medicines in the sector itself, which imposes risks to patient safety related to the selection and fractionation of medications by the nursing team.

The model for the selection and distribution of medicines adopted at this institution has been used by other services, although it is not recommended. According to recommendations of the MS and the National Agency of Sanitary Surveillance (ANVISA), this distribution system, called the collective system, should be abolished by health institutions because it is considered unsafe[5].

In the post-drug monitoring phase, adverse reactions were also highlighted by nursing workers, which shows them as contributing factors for the occurrence of other events, such as incidents involving falls.

Adverse reactions may arise from improper preparation and infusion time of the medicinal product as well as from the possibility of drug interactions given the amount of prescribed and administered medications. Such situations may be neglected because of the context of emergency work and are often interpreted as normal reactions.

It is considered that the risk for the occurrence of errors in the drug therapy process may be aggravated by the characteristics of the place of care and the patient's severity[2,8,13], and therefore, UPAs are considered to be high risk environments for such events, provoking discussions about the actions to be implemented in order to minimize these occurrences.

Actions for safety in the prescription, use and administration of medicines

Faced with the risks and incidents highlighted, a plan of priority actions to be implemented for the benefit of patient safety and the quality of care in the health institution was collectively constructed.

Regarding the risk management strategies related to drug therapy, workers scored actions that permeate all stages: patient identification; raising the risk of possible drug allergies; computerization of medical prescription; adoption of safe dispensing systems; and the involvement of the patient and team throughout the process (Chart 2).

The drug therapy process comprises several steps, including: prescribing, dispensing, preparing, administering and monitoring post-administration. Its complexity can be attributed to a multi-step process that depends on the interaction of a multidisciplinary team. Being the preparation and administration stages inherent to the nursing team, the causes of medication errors are commonly imputed to these professionals, although it is known that they occur mainly due to systemic failures related to the work environment and poorly elaborated processes[7,17].

The proposed action plan demonstrates the understanding of nursing workers about the decisive role they play in preventing errors in the drug therapy process, in line with the proposals encouraged by the PNSP[4,5], as well as by WHO initiatives through the Global Challenges[6].

It is observed that the implementation of actions requires simple measures, such as the reorganization of work processes and professional practices, among these measures the check of the "right" in the preparation and administration of medicines. This concern evidences the team's commitment to administering certain medication only when all stages of the process are certified, internationally recommended safety measures[5-6,18]. However, it is worth emphasizing that the recommendations do not guarantee that medication errors do not occur, given the very multi-causality of these phenomena, however, it may contribute to the prevention and minimization of these occurrences.

Safe practices in the drug therapy process	Nursing team testimonials	Goals to be achieved
Implantation of wristbands for patient identification	*[...]could even, thus, the implantation of that identification bracelet, which is a way of identifying this patient (E4).*	-Minimize the risks of medication errors by changing patients.
Implantation of colored bracelets to identify risks	*As prevention strategy of incidents we can implant colored bracelet for risks of falls, allergies (GF1-P4).*	-Minimize the risks of prescription and administration of medicine of which the patient is allergic and other risks that may be present in an emergency service.
Identify risk of drug allergy	*[...] many times professionals point out that the patient is allergic to plastic, has an allergy to buscopan ... and this question of safety also when the patient arrives at the doctor, knows how to inform also what he has already taken, which he has allergy (E15).*	-Minimize the risks of administering medication of which the patient is allergic. - Involve the patient and family in the care.
Checking all safety items	*"It is always to confirm if it is the same patient, if it is the record, if everything corresponds to the patient, to see if there is no change of medication, what we call in the nursing of the "five corrects", five C" (E11).*	- To ensure the safe administration of medicinal products (right patient, right medication, right track, right time, right dose, right record, right action, right form, right answer).
Elaborate institutional protocols	*All patients I ask if they have allergy to medications but need to turn protocol ask if the patient is allergic (GF1-P2).*	- Standardize safety checking of all items for safe practices in the drug therapy process.
Education in service	*As a measure of error prevention, perform professional orientation work, to be giving this name in all sectors, from the host, doctor's office, when to take the medication, check name and surname, full name (E19).*	- Involve and train staff to implement safe practices in drug administration.
Computerization of medical prescription	*I strongly believe that if it is computerized, even in terms of revenue, not to have medication error, error in the way, because of illegible letters, will also help a lot (E21). [...] if a doctor could open the computer and visualize the history, he would know that the patient was in the emergency room four times with the same complaint, had taken and that he did not improve with any medication [...] would sometimes have a more attentive view of the patient" (E21).*	- Ensure legibility in prescription and items necessary for safe prescription. - Ensure access to patient history and systematized information.
Restructure drug storage location	*And this question of how to organize medication also has to do with organization [...] (GF2-P4).*	- Ensure safety at the drug selection and dispensation stage.
Hiring a pharmaceutical professional	*For dispensing, for example, you would need to have a pharmacist for every hour, to spare, to work twenty-four hours, is a top-level professional, and does not have (GF2-P4).*	- Ensure safety at the drug selection and dispensation stage.
List with standardized drugs and their possible interactions	*It's a chart that tells us which medication can be mixed with another. It has medication that cannot be mixed with any other (GF2-P1).*	- Increase the safety of the use and prevention of adverse reactions through drug interaction, due to the greater familiarity of the health team with these drugs.

Clarification to the patient about the medication to be administered.	*[...] clarification of the patient for me is fundamental in the beginning, because through this I can avoid various incidents (E1).*	-Involve the patient and family in care as a barrier to error in administering the medication
Surveillance as for potentially dangerous or highly vigilant substances.	*For example, it installed the serum, made insulin, the correct one in case the insulin is to monitor the blood glucose, sixty, ninety minutes, does again the test already arrived at the ideal value (E18).* *Because very patient has the companion, most patients who sometimes come for hyperglycemia has companion, who can stand beside giving support (E18).*	- Minimize the risks of prescription and administration of potentially dangerous drugs. - Involve the patient and family in monitoring post-administration of potentially dangerous medications.

Chart 2 - Action plan: Safe practices in the prescription, use and administration of medicines
Source: [10].

In addition to monitoring risks and tracking damages, creating action plans, developing tools and technologies to support the creation of safe systems, it is also necessary to engage all stakeholders (health professionals, managers, the pharmaceutical industry) . Empowering patients, family members, and caregivers to actively participate in decisions related to their health care, asking questions, identifying errors, and managing their medications are actions that may represent the ultimate barrier to prevention of a care error[6-19].

The implementation of the electronic prescription as effective of the proposals of actions

Among the actions proposed, emphasis was placed on the use of technologies as a strategy to reduce errors in the dispensing, preparation and administration of drugs. Thus, the implantation of the electronic medical prescription was a proposal of the group of workers, since it allows the standardization of the main items necessary for a safe prescription, besides guaranteeing the legibility and the absence of erasures.

As the main advantages of electronic prescription we can highlight the guarantee of legibility and adequacy of information necessary for the dispensation and administration of drugs safely. Electronic prescription systems also allow the coupling of tools in support of clinical decision as maximum dose alerts for potentially dangerous / high vigilance drugs and / or with narrow therapeutic index; clinically significant drug interactions; allergies; presentations and standardized concentrations available at the institution[5-6,16].

However, electronic prescription cannot be conceived as a "lifeline" for medication errors, since, if it is not correctly used, it will not be able to, on its own, minimize errors, a fact proven in a study carried out in five Brazilian teaching hospitals, which demonstrated that the electronic prescription did not totally eliminate the possibility of this type of error[16].

According to the team, another relevant aspect of the computerization of medical care is the minimization of risks by ensuring longitudinal and systematized information of the patient, contributing to the decision making of the professionals, able to bring significant impact on the quality of care and, consequently, safety of the drug therapy process.

As challenges to the implantation of electronic prescription were pointed by the workers: excessive demand, resistance of the professionals and shortage of financial resources. However, workers believe that investing in customary hardware and software compatible with the reality of work, the involvement of professionals in construction and team training are key elements for the success of these actions.

Thus, a partnership was established between the Department of Information Technology and Communication of the Municipality, managers and professionals of the UPA, for the development of a computerized tool as a focus on the prescription of medicines, compatible with the reality of the professionals and the profile of care in urgency and local emergency. A prototype was then developed contemplating the items necessary for safe prescription, as shown in Figure 1.

Currently, the computerized tool is implemented in the PAU of the municipality, representing a total of approximately 500,000 calls per year.

Figure 1- Prototype electronic prescription as a strategy of safe practices in drug therapy.

Source:[10].

CONCLUSION

This action research made it possible to identify the risks, occurrences of adverse events and list actions to be implemented in a PAU based on the experiences of nursing workers, in order to improve patient safety and quality of care.

There have been situations involving risks to which patients are exposed, especially failures in the drug therapy process, attributable to several factors that permeate the process of health care.

As part of the priority actions, with emphasis on the drug therapy process, the need to adopt safe practices, such as the identification of the risks of allergies and the correct identification of the patient through bracelets, were highlighted; computerization of medical prescription; broadening the look at changes in the organization of the environment and work processes; awareness and involvement of the patient, family and professionals with a focus on adherence to the actions to be implemented.

It is emphasized that the study provoked discussions between workers and managers, a significant step towards an expanded view. Contributed to the transposition of knowledge into actions for improvement in the context of an emergency service, implemented in the implementation of a technology as a focus on the safety of safe practices in the process of drug therapy.

It is hoped to contribute even more to reflections of the daily practice and the formation of professionals oriented to the adoption of patient safety strategies, specifically in emergency services, as well as to subsidize future studies.

The exploration of the theme in a single UPA, only in the perception and experience of the nursing workers, constituted a limitation of the research.

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